

OCT 09 2007

**AMENDMENTS TO THE CLAIMS**

**1. (Currently Amended)** A system for enabling a plurality of wireless communication terminals present in a local area to communicate with a network outside the local area, the system comprising:

a plurality of sub-stations for forming respective wireless communication areas individually in the local area, and performing wireless communication with the wireless communication terminals in the respective corresponding wireless communication areas;

a main station connected to each of the plurality of sub-stations via an optical fiber transmission path; and

a plurality of access relay apparatuses points, connected to the main station via a wireless transmission path, for converting signals to be input from an outside of the local area to an inside of the local area to a signal form for use in the local area, and converting signals to be output from the inside of the local area to the outside of the local area to a signal form for use in the outside of the local area, ~~[[;]]~~ and

~~a main station provided between the sub-stations and the access relay apparatuses,~~  
wherein the main station comprises:

a managing section operable to determine one of the plurality of access relay ~~apparatuses~~ points to which a first one of the wireless communication terminals is accessible; and

a selecting section operable to select and output one of the signals to be input from the outside of the local area, whose form is converted in the one of the plurality of access ~~relay apparatuses~~ points determined by the managing section, and which is input to the local area, to the first wireless communication terminal via a corresponding one of the sub-stations.

**2. (Currently Amended)** The wireless communication system according to claim 1, wherein each of the plurality of access ~~relay apparatuses~~ points uses a frequency different from one another,

wherein the selecting section further comprises:

a plurality of splitting sections corresponding to the respective access ~~relay apparatuses~~ points;

a plurality of switching sections corresponding to the respective sub-stations; and  
a plurality of multiplexing sections corresponding to the respective switching sections,  
wherein each of the splitting sections splits and outputs a signal out of the plurality of  
signals to be input to the local area whose form has been converted in a corresponding one of the  
access ~~relay apparatuses~~ points, to all of the switching sections,

wherein each of the switching sections is switched to determine which of the signals  
output from the splitting sections is output to the first wireless communication terminal via the  
corresponding sub-station, and

wherein each of the multiplexing sections frequency-multiplexes the signals output from  
the corresponding switching section to create a multiplexed signal to be input to the local area  
and outputs the multiplexed signal to the corresponding sub-station.

**3-4. (Canceled)**

**5. (Currently Amended)** The wireless communication system according to claim 1,  
further comprising a network switch provided between the access ~~relay apparatuses~~ points and  
the network outside the local area, wherein

the network switch is operable to manage a state of connection between each of the  
access ~~relay apparatuses~~ points and the wireless communication terminals present in the local  
area, to specify the first wireless communication terminal present in the local area with reference  
to a signal input to the network switch, and based on the connection state, to output the signal  
input to the network switch to the access ~~relay apparatus~~ point connected to the first wireless  
communication terminal.

**6. (Currently Amended)** The wireless communication system according to claim 5,  
wherein the first wireless communication terminal present in the local area transmits a  
signal to be transmitted to a second wireless communication terminal present in the local area, to  
the sub-station of the communication area to which the first wireless communication terminal  
belongs,

wherein the signal to be transmitted to the second wireless communication terminal is input via the sub-station of the communication area to which the first wireless communication terminal belongs and the main station to the access ~~relay-apparatus point~~ connected to the first wireless communication terminal, is converted to a signal for use in the outside of the local area in the access ~~relay-apparatus point~~ connected to the first wireless communication terminal, and is output to the network switch, and

wherein the network switch specifies the second wireless communication terminal present in the local area with reference to the signal whose form has been converted in the access ~~relay-apparatus point~~ connected to the first wireless communication terminal, and based on the connection state, outputs the signal input to the network switch from the access ~~relay-apparatus point~~ connected to the first wireless communication terminal to the access ~~relay-apparatus point~~ connected to the second wireless communication terminal.

**7. (Currently Amended)** The wireless communication system according to claim 1, wherein the sub-stations receive the signals to be output from the inside of the local area to the outside of the local area, the signals being transmitted from the wireless communication terminals, and output the received signals to the main station,

wherein the main station outputs the signals received from the sub-stations to the access ~~relay-apparatuses points~~, and

wherein the access ~~relay-apparatuses points~~ convert the signals to be output from the inside of the local area to the outside of the local area, the signals being output from the main station, to the signal form for use in the outside of the local area, and output the converted signals to the outside of the local area.

**8. (Currently Amended)** The wireless communication system according to claim 7, wherein the main station further comprises:

a plurality of main station signal receiving sections corresponding to the respective sub-stations, for receiving the signals to be output from the inside of the local area to the outside of the local area, the signals being output from the sub-stations; and

a main station combining section operable to combine the signals to be output from the inside of the local area to the outside of the local area, the signals being received by the plurality of the main station signal receiving sections, and to output the combined signal to the access relay-apparatuses points.

**9. (Currently Amended)** The wireless communication system according to claim 7, wherein each of the access relay-apparatuses points further comprises:

an intensity detecting section operable to detect an intensity of a signal transmitted from the main station; and

a request section operable to request the main station to switch from a first signal being transmitted to the access relay-apparatus point to a different signal when the intensity of the first signal transmitted from the main station, the intensity being detected by the intensity detecting section, is lower than a predetermined value,

wherein when the request from the request section is present and the main station receives a second signal having the same contents as the first signal, the main station outputs the second signal to the access relay-apparatus point instead of the first signal, and

wherein the first signal is transmitted to the main station from a first one of the plurality of sub-stations, and the second signal is transmitted to the main station from a second one of the plurality of sub-stations.

**10. (Previously Presented)** The wireless communication system according to claim 7, wherein each of the sub-stations further comprises a crosstalk canceling section operable to create a signal having the same intensity as that of crosstalk occurring in a signal to be output from the inside of the local area to the outside of the local area due to an influence of a signal to be input to the local area, based on the signal to be input to the local area, to invert the signal having the same intensity as that of the crosstalk, and to add the inverted signal to the crosstalk.

**11. (Previously Presented)** The wireless communication system according to claim 10, wherein the crosstalk canceling section comprises:

a first coupler section for splitting a portion of the signal to be input to the local area; and  
a second coupler section for combining the portion of the signal to be input to the local area which has been split by the first coupler section, with the signal to be output from the inside of the local area to the outside of the local area,

wherein the first coupler section changes a phase of a signal to be output to the second coupler section by  $90^\circ$  when splitting the signal to be input to the local area, and

wherein the second coupler section changes a phase of the signal to be input to the local area which has been output from the first coupler section, by  $90^\circ$ , when combining the two signals.

**12. (Previously Presented)** The wireless communication system according to claim 7, wherein each of the sub-stations includes a signal transmitting/receiving system for outputting the signals to be output from the inside of the local area to the outside of the local area, the signals being output from the wireless communication terminals, to the main station, and a signal transmitting/receiving system for transmitting the signals to be input to the local area, the signals being output from the main station, to the wireless communication terminals,

wherein each of the signal transmitting/receiving systems are accommodated in separate housings.

**13. (Previously Presented)** The wireless communication system according to claim 1, wherein the main station is connected to each of the plurality of sub-stations via a respective optical transmission line,

wherein the main station further comprises an optical signal conversion section operable to convert the signal selected by the selecting section to an optical signal, and

wherein each of the sub-stations converts the optical signal output from the main station to an electrical signal in a form for use in the local area, and transmits the electrical signal in the form of a wireless radio wave in the corresponding wireless communication areas.

**14-15. (Canceled)**

**16. (Currently Amended)** The wireless communication system according to claim 13, wherein each of the sub-stations further comprises a sub-station frequency-converting section operable to convert a frequency of the converted electrical signal in the form for use in the local area from an intermediate frequency to a frequency which is used when the one of the plurality of access ~~relay-apparatuses~~ points has output the electrical signal,

wherein the signal frequency-converted by the sub-station frequency-converting section is transmitted in the form of a wireless radio wave to the first wireless communication terminal in the corresponding wireless communication area,

wherein the main station further comprises a main station frequency-converting section operable to convert a frequency of the signal to be input to the local area, a form of the signal having been converted by the one of the access ~~relay-apparatuses~~ points, to the intermediate frequency, and

wherein the selecting section selects the signal to be input to the local area whose form has been converted by the one of the access ~~relay-apparatuses~~ points and which has been frequency-converted by the main station frequency-converting section.

**17. (Currently Amended)** The wireless communication system according to claim 13, wherein the access ~~relay-apparatuses~~ points output the converted signals to be input to the local area as signals having a first intermediate frequency to the main station,

wherein the main station further comprises a main station frequency-converting section operable to convert a frequency of the signals to be input to the local area, the signals being output from the access ~~relay-apparatuses~~ points, to a second intermediate frequency, and

wherein the selecting section selects the signals to be input to the local area which have been converted by the access ~~relay-apparatuses~~ points and which have been frequency-converted by the main station frequency-converting section.

18. **(Original)** The wireless communication system according to claim 13, wherein the optical transmission lines connecting the respective sub-stations and the main station have lengths substantially equal to one another.

19. **(Currently Amended)** The wireless communication system according to claim 1, wherein the main station is connected to each of the plurality of sub-stations via a respective optical transmission line,

wherein the main station further comprises an optical signal conversion section operable to convert the signals to be input to the local area, a form of the signals having been converted by the access ~~relay apparatuses~~ points, to optical signals, and

wherein the selecting section selects and outputs the optical signals converted by the optical signal conversion section to the corresponding sub-stations.

20. **(Currently Amended)** The wireless communication system according to claim 1, wherein the main station further comprises a plurality of signal receiving sections corresponding to the respective sub-stations, for receiving all signals which are output from the respective access ~~relay apparatuses~~ points,

wherein the selecting section comprises:

a plurality of splitting sections corresponding to the respective sub-stations; and

a plurality of selecting/outputting sections provided between the respective sub-stations and the respective splitting sections,

wherein the splitting sections split all of the signals to be input to the local area which have been output from the respective access ~~relay apparatuses~~ points and have been received by the respective signal receiving sections, into signals to be input to the local area for the respective access ~~relay apparatuses~~ points, and

wherein the selecting/outputting sections output the signals to be input to the local area which are to be output to the corresponding sub-stations, among the signals to be input to the local area which have been split by the corresponding splitting sections, to the wireless communication terminals via the corresponding sub-stations.

**21. (Currently Amended)** The wireless communication system according to claim 1, wherein the selecting section comprises:  
a plurality of signal receiving sections corresponding to the respective sub-stations; and  
a plurality of selecting/outputting sections provided between the respective sub-stations and the respective signal receiving sections,

wherein each of the signal receiving sections receives only the signal to be input to the local area which is to be transmitted to the corresponding sub-station, among the signals to be input the local area which have been output from the respective access ~~relay-apparatuses~~ points, and

wherein the selecting/outputting sections transmit the signals to be input to the local area which have been received by the respective signal receiving sections, to the respective corresponding sub-station.

**22. (Currently Amended)** The wireless communication system according to claim 1, wherein each of the wireless communication terminals present in the local area comprises a communication start request section operable to request for starting communication via a corresponding one of the access ~~relay-apparatuses~~ points to the sub-station in the communication area to which the respective wireless communication terminals belong,

wherein the communication start requests reach the main station via the corresponding sub-stations, and

wherein the main station comprises:

a communication request signal receiving section operable to receive the communication start requests transmitted from the communication start request sections; and

a communication starting section operable to start communication via the access ~~relay-apparatuses~~ points corresponding to the sub-stations based on the communication start requests received by the communication request signal receiving sections.



**23. (Currently Amended)** The wireless communication system according to claim 1, wherein the selecting section does not select or output the signal output by the one of the plurality of access relay apparatuses points to the corresponding one of the sub-stations when the sub-station has not transmitted a signal to the one of the plurality of access relay apparatuses points for a predetermined period of time or more.

**24. (Currently Amended)** A system for enabling a plurality of wireless communication terminals present in a local area to communicate with a network outside the local area, the system comprising:

a plurality of sub-stations for forming respective wireless communication areas individually in the local area, and performing wireless communication with the wireless communication terminals in the respective corresponding wireless communication areas;

a main station connected to each of the plurality of the sub-stations via an optical fiber transmission path; and

a plurality of access relay apparatuses points, connected to the main station via a wireless transmission path, for converting signals to be input from an outside of the local area to an inside of the local area to a signal form for use in the local area, and converting signals to be output from the inside of the local area to the outside of the local area to a signal form for use in the outside of the local area, ~~[[;]] and~~

~~a main station provided between the sub-stations and the access relay apparatuses,~~  
wherein the main station comprises:

a multiplexing section operable to frequency-multiplex the signals converted by the plurality of access relay apparatuses points to be input to the local area, and

a selecting section operable to select and output the signals to be input to the local area, which have been multiplexed by the multiplexing section, to all of the sub-stations.

**25-41. (Canceled)**

42. (Currently Amended) A main station, ~~connected to~~ provided between a plurality of sub-stations via an optical fiber transmission path for forming respective wireless communication areas in a local area and performing wireless communication with a plurality of wireless communication terminals in the respective wireless communication areas, and a plurality of access ~~relay apparatuses~~ points for outputting signals to be input from an outside of the local area to an inside of the local area, the main station comprising:

a managing section operable to determine one of the plurality of access ~~relay apparatuses~~ points to which a first one of the wireless communication terminals is accessible; and  
a selecting section operable to select and output the signals to be input to the local area which have been received by the access ~~relay apparatuses~~ points.

43. (Currently Amended) A main station, ~~connected to~~ provided between a plurality of sub-stations via an optical fiber transmission path for forming respective wireless communication areas in a local area and performing wireless communication with a plurality of wireless communication terminals in the respective wireless communication areas, and a plurality of access ~~relay apparatuses~~ points for outputting signals to be input from an outside of the local area to an inside of the local area, the main station comprising:

a signal receiving section operable to receive the signals to be input to the local area which have been received by the access ~~relay apparatuses~~ points;

a multiplexing section operable to frequency-multiplex the signals to be input to the local area, the signals being received by the signal receiving section; and

a selecting section operable to select and output the signals to be input to the local area which have been multiplexed by the multiplexing section, to all of the sub-stations.

44. (Previously Presented) A sub-station for use in a wireless communication system, wherein the sub-station forms a wireless communication area in a local area, and communicates with a wireless communication terminal present in the wireless communication area formed by the sub-station,

wherein in the wireless communication system, signals to be input from an outside of the local area to an inside of the local area are converted by a plurality of access relay apparatuses to a signal form for use in the local area, and one of the signals is selected and output to the sub-station, and

wherein the sub-station comprises:

a signal receiving section operable to receive the selected and output signal; and

a radio wave signal transmitting section operable to transmit the signal received by the signal receiving section to the wireless communication terminal present in the wireless communication area in the form of a wireless radio wave.

**45. (Previously Presented)** The sub-station according to claim 44,

wherein the signal to be input from the outside of the local area to the inside of the local area is converted to a signal in an optical signal form, and the optical signal is selected and output,

wherein the signal receiving section receives the signal converted to the optical signal form,

wherein the sub-station further comprises an electrical conversion section operable to convert the signal received by the signal receiving section to an electrical signal form,

wherein the radio wave signal transmitting section transmits the signal converted by the electrical conversion section to the wireless communication terminal in the form of a wireless radio wave,

wherein the wireless communication terminal transmits a signal to be output from the inside of the local area to the outside of the local area in the form of a wireless radio wave,

wherein the sub-station further comprises:

a radio wave signal receiving section operable to receive the signal transmitted by the wireless communication terminal;

a signal transmitting section operable to transmit the signal received by the radio wave signal receiving section to an outside of the wireless communication area formed by the sub-station; and

an optical conversion section operable to convert the signal received by the radio wave signal receiving section to an optical signal form, and

wherein the signal transmitting section transmits the optical signal converted by the optical conversion section to the outside of the wireless communication area formed by the sub-station.

**46-47. (Canceled)**

**48. (Previously Presented)** The sub-station according to claim 45, further comprising a crosstalk canceling section operable to create a signal having the same intensity as that of crosstalk occurring in the signal to be output from the inside of the local area to the outside of the local area due to an influence of the signal to be input to the local area, based on the signal to be input to the local area, to invert the signal having the same intensity as that of the crosstalk, and to add the inverted signal to the crosstalk.

**49. (Previously Presented)** The sub-station according to claim 48, wherein the crosstalk canceling section comprises:  
a first coupler section for splitting a portion of the signal to be input to the local area; and  
a second coupler section for combining the portion of the signal to be input to the local area which has been split by the first coupler section, with the signal to be output from the inside of the local area to the outside of the local area,

wherein the first coupler section changes a phase of a signal to be output to the second coupler section by 90° when splitting the signal to be input to the local area, and

wherein the second coupler section changes a phase of the signal to be input to the local area which has been output from the first coupler section, by 90°, when combining the two signals.

**50. (Previously Presented)** The sub-station according to claim 45, wherein the signal receiving section and the radio wave signal transmitting section are accommodated in a first

housing, and the signal transmitting section and the radio wave signal receiving section are accommodated in a second housing.

**51. (Currently Amended)** In a system comprising a plurality of sub-stations for forming respective wireless communication areas individually in the local area, and performing wireless communication with a plurality of wireless communication terminals in the respective corresponding wireless communication areas, a plurality of access ~~relay apparatuses~~ points for converting signals to be input from an outside of the local area to an inside of the local area to a signal form for use in the local area, and converting signals to be output from the inside of the local area to the outside of the local area to a signal form for use in the outside of the local area, and a main station provided between the sub-stations and the access ~~relay apparatuses~~ points,

a method performed by the main station comprising:

determining one of the plurality of access ~~relay apparatuses~~ points to which a first one of the wireless communication terminals is accessible; and

selecting and outputting one of the signals to be input from the outside of the local area, whose form is converted in the one of the plurality of access ~~relay apparatuses~~ points having been determined, and which is input to the local area, to the first wireless communication terminal via a corresponding one of the sub-stations.

**52. (Currently Amended)** In a system comprising a plurality of sub-stations for forming respective wireless communication areas individually in the local area, and performing wireless communication with a plurality of wireless communication terminals in the respective corresponding wireless communication areas, a plurality of access ~~relay apparatuses~~ points for converting signals to be input from an outside of the local area to an inside of the local area to a signal form for use in the local area, and converting signals to be output from the inside of the local area to the outside of the local area to a signal form for use in the outside of the local area, and a main station provided between the sub-stations and the access ~~relay apparatuses~~ points,

a method performed by the main station comprising:

frequency-multiplexing the signals converted by the plurality of access ~~relay~~  
~~apparatuses~~ points to be input to the local area, and

selecting and outputting the signals to be input to the local area which have been  
multiplexed by the multiplexing section, to all of the sub-stations.